

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
6 May 2005 (06.05.2005)

PCT

(10) International Publication Number  
**WO 2005/040735 A1**

(51) International Patent Classification<sup>7</sup>: **G01F 1/84**

(21) International Application Number:  
PCT/US2003/031027

(22) International Filing Date:  
30 September 2003 (30.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **MICRO  
MOTION, INC.** [US/US]; 7070 Winchester Circle, Boul-  
der, CO 80301 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **MANSFIELD,**  
William, M. [US/US]; 3975 Dale Drive, Lafayette, CO  
80026 (US).

(74) Agents: **JANSEN, Gregg, L.** et al.; Setter Ollila LLC,  
2060 Broadway, Suite 300, Boulder, CO 80302 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

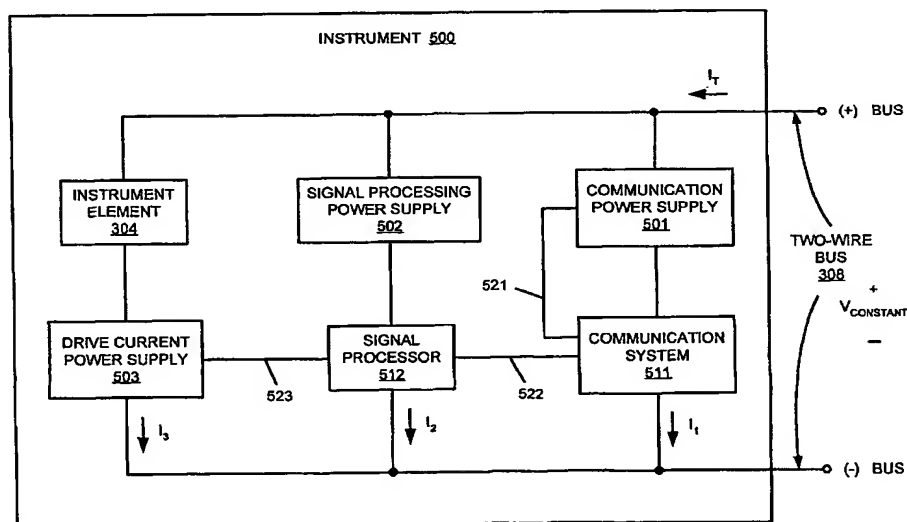
(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,  
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES,  
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH,  
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,  
TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO

[Continued on next page]

(54) Title: **TWO-WIRE BUS INSTRUMENT**



(57) Abstract: A two-wire bus instrument (500) adapted for use with a two-wire bus (308) is provided according to an embodiment of the invention. An instrument element (304) receives a third current and generates one or more sensor measurement signals. A signal processor (512) receives a second current and processes the one or more sensor measurement signals to produce a data signal. A communication system (511) receives a first current, receives the data signal, generates a digital communication signal including the data signal, and modulates the digital communication signal onto a two-wire bus (308). A communication power supply (501) connected across the two-wire bus (308) provides the first current to the communication system (511). A signal processing power supply (502) connected across the two-wire bus (308) provides the second current to the signal processor (512). A drive current power supply (503) connected across the two-wire bus (308) provides the third current to the instrument element (304).



*patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*